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## NEW RECORDS OF MAMMALS FROM WESTERN OKLAHOMA

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### ABSTRACT

We report new locality records for 23 species of mammals from western Oklahoma collected during spring and summer 2005, 2006, and 2007. Of these records, four constitute range extensions for the documented distributions of these species in Oklahoma (*Scalopus aquaticus*, *Microtus pinetorum*, *Neotoma floridana*, *Reithrodontomys fulvescens*) and one is a range extension for North America (*Baiomys taylori*). Specimens were collected as part of a survey of 14 western Oklahoma Wildlife Management Areas. These records enhance our understanding of the distribution and natural history of mammalian fauna on the southern Great Plains.

Key words: county records, mammals, western Oklahoma, Wildlife Management Areas

### INTRODUCTION

Despite extensive treatment of the mammals of Oklahoma by Caire et al. (1989) and the literature that has followed on the natural history and distribution of mammals in the state (Dalquest et al. 1990; Girard et al. 1990; Gettinger 1991; Clark and Tumblison 1992; Stangl et al. 1992, 2004; Tappe et al. 1994; Stancampiano and Caire 1995; Taulman and Robbins 1996; Tyler and Donelson 1996; Stangl and Carr 1997; Choate and Jones 1998; Nisbett et al. 2001; Lomolino and Smith 2003; McCaffrey et al. 2003; Wallace and Stangl 2003; Stancampiano and Schnell 2004; Thill et al. 2004; Braun and Revelez 2005; McDonald et al. 2006), further basic knowledge of mammalian natural history is necessary and will enhance the Oklahoma Comprehensive Wildlife Conservation Strategy (Oklahoma Department of Wildlife Conservation 2005). Natural history data are necessary before scientists can elucidate

fundamental ecological principles and parameters that, along with natural history information, are essential to detect changes in an organism's distribution, density and demography, community-level interactions, or in the underlying processes that have shaped ecosystems in Oklahoma. Furthermore, natural history information is the foundation of biological sciences, even for those fields further removed from this basic knowledge (e.g., agriculture research, behavior, cellular biology, ecotoxicology, evolution, genetics, and proteomics; Bartholomew 1986; Schmidly 2005). It is this basic natural history information about Oklahoma mammals (or any organism) that is required to develop a sound foundation for sustainable economic development, resource management, and responsible conservation of the state's resources into the future (Wilcove and Eisner 2000; Schmidly 2002, 2005).

We report new records for 23 species of mammals represented by 93 specimens collected from 12 counties in western Oklahoma based on over 50,100 trap nights and 75 net nights. These specimens were collected from March through August, 2005–2007, as part of a survey of 14 western Oklahoma Wildlife Management Areas (WMA): Altus-Lugert, Beaver River, Black Kettle, Canton, Cooper, Ellis County, Fort Cobb, Fort Supply, Hackberry Flat, Mountain Park, Optima, Packsaddle, Rita Blanca, and Sandy Sanders (Fig. 1). These WMAs are located within three level III

ecoregions: High Plains, Southwestern Tablelands, and Central Great Plains (Woods et al. 2005). We include several mammal records that were reported previously from owl pellets (McDonald et al. 2006; denoted by asterisk next to species name). These complete voucher specimens (skin and skeleton) provide further support for these owl pellet records and provide information on a location of habitation, under specific conditions, and on a specific date (data unattainable from owl pellet specimens).

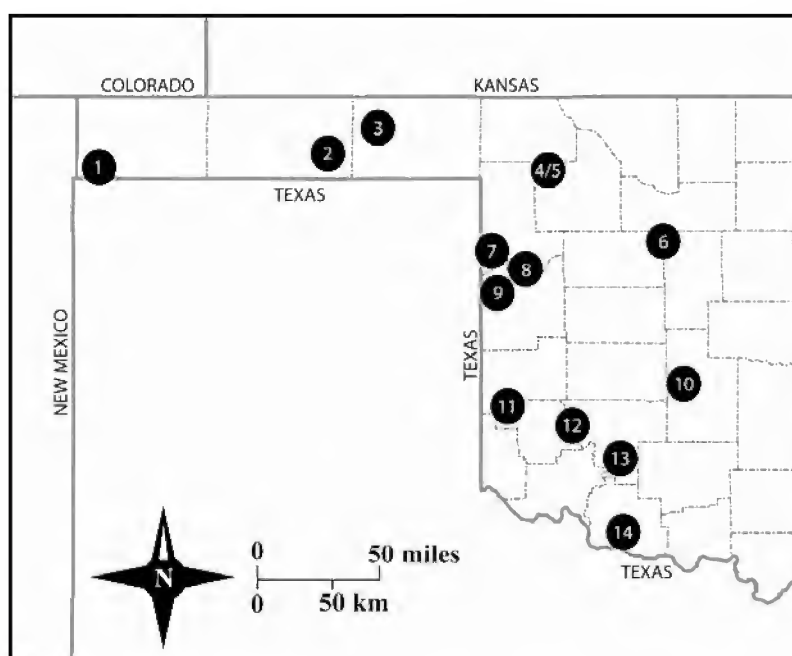


Figure 1. Location of the 14 state Wildlife Management Areas in western Oklahoma surveyed in this study: 1) Rita Blanca; 2) Optima; 3) Beaver River; 4/5) Fort Supply and Cooper; 6) Canton; 7) Ellis County; 8) Packsaddle; 9) Black Kettle; 10) Fort Cobb; 11) Sandy Sanders; 12) Altus-Lugert; 13) Mountain Park; 14) Hackberry Flat.

## METHODS

All specimens were collected under guidelines of the American Society of Mammalogists (Gannon et al. 2007), and collection protocols were approved by the Oklahoma State University Institutional Animal Care and Use Committee and the Oklahoma Department of Wildlife Conservation. Specimens were collected using mist nets (Avinet, Inc.; Dryden, NY) over pools,

Sherman live traps (H.B. Sherman Traps; Tallahassee, FL) set in transects, and through opportunistic salvage. Voucher specimens (including tissues and embryonic material) for all county records reported herein were deposited in the Oklahoma State University Collection of Vertebrates (OSU for specimens; OK for tissues and embryological materials). Parasites (mainly

ectoparasites) were deposited in the University of Nebraska State Museum, Harold W. Manter Laboratory of Parasitology. Specific locality information was recorded in miles and converted to kilometers. Locality coordinates were recorded as uncorrected Universal Transverse Mercator (UTM) units with Garmin GPS

12XL handheld receivers (Olathe, KS) using the World Geodetic System of 1984 Geodetic Reference System. Localities are listed from north to south then west to east in “specimens examined” sections. Taxonomy and common names follow Wilson and Reeder (2005) except where noted.

### SPECIES ACCOUNTS

#### ORDER DIDELPHIMORPHIA

##### Family Didelphidae

#### *Didelphis virginiana* Kerr 1792

##### Virginia Opossum

The Virginia opossum is ubiquitous in a variety of habitats across the state. However, over one-quarter of counties lack specimen records (Caire et al. 1989; Braun and Revelez 2005), despite being one of the most harvested furbearers in Oklahoma (Hatcher 1986). A new county record for Roger Mills County was recovered (skull only) from a salvaged road kill adult.

*Specimen examined* (1).—Roger Mills Co.: 1.3 km W Cheyenne on Hwy. 47A, UTM 14-3941665N-0437815E, 609 m, 1 male (OSU12995).

#### ORDER CINGULATA

##### Family Dasypodidae

#### *Dasypus novemcinctus* Linnaeus 1758

##### Nine-banded Armadillo

The nine-banded armadillo was first reported in the United States in 1849, and has since rapidly expanded its range north and east (Taulman and Robbins 1996). Range expansion is due to landscape changes, particularly increases in woody vegetation caused by suppression of fire and cattle grazing, and climate change (Taulman and Robbins 1996). The nine-banded armadillo was first reported from Oklahoma in 1932 in Rogers County (Tyler and Donelson 1996). Its current distribution is reported to include all of Oklahoma, but records are lacking for more than one-half the counties (Caire et al. 1989; Braun and Revelez 2005). The following records are of a salvaged road kill adult collected in Ellis County and skeletal remains of an adult recovered from granite boulder strewn mixedgrass prairie in Kiowa County.

*Specimens examined* (2).—Ellis Co.: 29.6 km S, 3.7 km E Arnett on Hwy. 283 at north end of Canadian River bridge, UTM 14-3969975N-0434421E, 489 m, 1 male (OSU12996). Kiowa Co.: 5.8 km N, 6.1 km W Mountain Park in Mountain Park WMA, UTM 14-3845039N-0498705E, 451 m, 1 sex unknown (OSU13091).

#### ORDER SORICOMORPHA

##### Family Talpidae

#### *Scalopus aquaticus* (Linnaeus 1758)

##### Eastern Mole

The eastern mole is a fossorial insectivore found predominately in loamy and moist sandy soils of Oklahoma (Caire et al. 1989). Dalquest et al. (1990) documented visual evidence of this species in the Oklahoma Panhandle. We document the first specimen record for the Oklahoma Panhandle from Texas County. This specimen was obtained from an owl pellet collected below an active barn owl (*Tyto alba*) roost in the limestone wall of a rocky ravine. The locality of this roost is approximately 79 km from the nearest point on the Cimarron County border; 32.5 km from the Kansas border; 22.5 km from the Texas border; and 18 km from the Beaver County border. Based on reported home ranges for barn owls from Texas (355 ha; Byrd 1982) and Nebraska (198 ha; Gubanyi 1989), we feel confident that this record came from Texas County in the area surrounding Optima WMA.

*Specimen examined* (1).—Texas Co.: 29.5 km E Guymon in Optima WMA, UTM 14-4063803N-0307865E, 851 m, 1 sex unknown (OSU12997).

## ORDER CHIROPTERA

Family Molossidae

*Tadarida brasiliensis*

(L. Geoffroy-Saint-Hilaire 1824)

Brazilian Free-tailed Bat

The Brazilian free-tailed bat is a seasonal resident of the gypsum cave region of western Oklahoma where large maternity colonies reside generally from May to October (Caire et al. 1989). Scattered records of mostly single individuals roosting in anthropogenic structures have been documented across the state. One such individual is reported here, found roosting under a covered porch of the Hackberry Flat WMA maintenance shop in the first week of May 2006 (Kelvin Schoonover, WMA Biologist, pers. comm.). Because these bats are capable of long-distance flights each night while foraging (Best and Geluso 2003) and migrate south into Texas and Mexico in the winter (for Oklahoma populations; Glass 1982), it is unclear whether this record is of a resident roosting at this locality, a resident that did not return to its usual day roost, or a migrant utilizing a transient roost on its return to its summer roost.

*Specimen examined* (1).—Tillman Co.: 11.9 km S, 5.2 km E Frederick (county seat) in Hackberry Flat WMA, UTM 14-3793942N-0503425E, 359 m, 1 sex unknown, (OSU13092).

Family Vespertilionidae

*Lasiurus borealis* (Müller 1776)

Eastern Red Bat

A foliage rooster, the eastern red bat is associated with eastern deciduous forest in North America. In Oklahoma, it was believed to be uncommon in the western one-half of the state (Caire et al. 1989), but it likely is increasing in abundance due to increased woody vegetation. The eastern red bat is the most common summer bat in central Oklahoma (Caire et al. 1989). Four new records are reported here for Caddo County captured in mist nets over Cobb Creek. These include one female flying young-of-the-year (FYOY; OSU13094) and an adult male with descended testes (OSU13093) captured on 31 July 2005, and a male FYOY (OSU13095) and one adult female (OSU13096) captured on 6 July 2006. A male FYOY (OSU13097) also was collected from Ellis County on 13 July 2007 over West Creek.

*Specimens examined* (5).—Caddo Co.: 7.4 km S, 18.7 km W Binger in Fort Cobb WMA on Cobb Creek, UTM 14-3899498N-0541084E, 418 m, 1 female (OSU13094), 1 male (OSU13093); 7.9 km S, 18.8 km W Binger in Fort Cobb WMA on Cobb Creek, 14-3899523N-0541052E, 408 m, 1 female (OSU13096), 1 male (OSU13095). Ellis Co.: 27.2 km S, 4.2 km E Arnett in Packsaddle WMA on West Creek, UTM 14-3971864N-0434908E, 635 m, 1 male (OSU13097).

*Perimyotis subflavus* (F. Cuvier 1832)

Eastern Pipistrelle

Recent molecular work by Hoofer and Van Den Bussche (2003) and Hoofer et al. (2006) on vespertilionid bats supported previous studies (bacula, Hamilton 1949; chromosomes, Baker and Patton 1967) documenting polyphyly of the genus *Pipistrellus* with respect to New World pipistrelles. Based on these findings we follow Menu (1984) and Hoofer et al. (2006) in the use of *Perimyotis* rather than the genus *Pipistrellus*. The eastern pipistrelle has been recorded across Oklahoma, excluding the Panhandle; however, new records in western Texas (including the Panhandle), Colorado, and Union County, New Mexico (west adjacent Cimarron Co., Oklahoma; Geluso et al. 2005) suggest that *P. subflavus* is distributed statewide. These western range expansions are hypothesized to be the result of *P. subflavus* exploiting the wooded riparian corridors that are expanding across the Great Plains (Sparks and Choate 2000; Geluso et al. 2005). Caves are used as winter hibernacula and caves and trees as spring, summer, and autumn roosts (Caire et al. 1989). One new record of an adult female was collected in a mist net over an oxbow of the Canadian River, Dewey County.

*Specimen examined* (1).—Dewey Co.: 10.6 km N, 14.0 km W Canton in Canton WMA on oxbow of Canadian River, UTM 14-4000922N-0522639E, 504 m, 1 female (OSU13098).

*Corynorhinus townsendii* (Cooper 1837)

Townsend's Big-eared Bat

*Corynorhinus townsendii pallescens* (western Oklahoma subspecies) inhabits gypsum and granite outcrops of western Oklahoma (Caire et al. 1989). Outcrops of interstratal gypsum karst cover approxi-



mately 4% of the state in three principle outcroppings: Cimarron, Weatherford, and Mangum Gypsum Hills (Johnson 1972, 2003). Movements of this species from and between maternity colonies and hibernacula average 1.0–11.6 km (Humphrey and Kuntz 1976; Kuntz and Martin 1982). Significant morphological variation exists among populations in close proximity from Kansas, Oklahoma, and Texas that discriminate function analysis associated >90% of all specimens to the correct locality of collection, possibly reflecting restricted interpopulation gene flow or differential selection pressures for each subpopulation (Smith and Tumlison 2004). Females appear to be philopatric based on observational studies (Pearson et al. 1952) and molecular data (Smith et al., in press); males, however, may travel longer distances (Smith et al., in press). *C. townsendii* individuals were observed roosting in two caves on the north side of Minnow Creek. The first cave was about 50 m downstream from the locality listed below, ranged from 0.6–1.5 m in height and width, was approximately 75–100 m long, and had multiple openings. One *C. townsendii* was observed in this cave. The second cave had a larger opening along the creek (~ 3 m diameter) and had side tunnels that tapered to a size similar to the first cave. Four *C. townsendii* were observed in this cave, and one was collected by hand from the ceiling of the cave.

*Specimen examined* (1).—Beckham Co.: 16.6 km S, 2.6 km E Erick in Sandy Sanders WMA, UTM 14-3880494N-0423387E, 588 m, 1 male (OSU13099).

*Myotis velifer* (J. A. Allen 1890)  
Cave Myotis

The cave myotis is one of the largest members of the genus, and as its common name implies is a troglodite (Caire et al. 1989). However, it has been recorded roosting in man-made structures in the state (Stangl et al. 1992; Wallace and Stangl 2003). The distribution of the species in Oklahoma is centered on the gypsum cave region of the western one-half of the state (Caire et al. 1989). We report eight new records from Beckham County captured in mist nets over Minnow Creek and two new records collected over West Creek in Ellis County.

*Specimens examined* (10).—Beckham Co.: 16.4 km S, 1.3 km E Erick Post Office (PO) in Sandy Sanders WMA along Minnow Creek, UTM 14-3880433N-0422149E, 548 m, 6 females (OSU13100–OSU13103, OSU13105, OSU13106), 2 male (OSU13104, OSU13107). Ellis Co.: 27.2 km S, 4.2 km E Arnett in Packsaddle WMA over West Creek, UTM 14-3971864N-0434908E, 635 m, 2 males (OSU13108, OSU13109).

*Myotis yumanensis* (H. Allen 1864)  
Yuma Myotis

The Yuma myotis has been recorded only from the Black Mesa region of the northwestern corner of Cimarron County (Caire et al. 1989; Dalquest et al. 1990). On 16 June 2007, we caught three *Myotis yumanensis* in nets set over a stock tank. Of these three adult females, two were pregnant each with one fetus (preserved; OK11236, OK11237). The area was dominated by shortgrass prairie with a slightly irregular relief, different from the topography and piñon-juniper (*Pinus* subsection *Cembroides-Juniperus*) vegetation of the mesa and canyon lands of northwestern Cimarron County. Findley et al. (1975) and Caire et al. (1989) noted that Yuma myotis roost in anthropogenic structures. This stock tank is about 0.2 km to the southwest of a farmyard with an old wooden barn and various other buildings, and about 0.8 km to the southeast of the town of Felt, Oklahoma. The closest trees are in the farmyard and a picnic area about 0.2 km to the northwest of the stock tank. Aqua Fria Creek is an intermittent creek about 0.5 km to the south of the stock tank and has a limestone outcrop on the south side, without substantial (>1 m wide or deep) crevices or caves. These specimens are not new county records but do expand the range of this species in Oklahoma. These records confirm the predictions of Caire et al. (1989) that the Yuma myotis should be found in southwestern Cimarron County, and expand our knowledge of the ecology of this bat on the margins of its distribution.

*Specimens examined* (3).—Cimarron Co.: 1.3 km S, 0.6 km E Felt in Rita Blanca WMA, UTM 13-4048061N-0697913E, 1351 m, 3 females (OSU13110 – OSU13112).

## ORDER CARNIVORA

## Family Mephitidae

*Mephitis mephitis* (Schreber 1776)

## Striped Skunk

The striped skunk is common across Oklahoma and can be found in all types of habitat including crop fields, farmyards, towns, and cities. These omnivores are well known for their odor that they use as a defense mechanism to ward off predators. We collected the skull of a striped skunk in Kiowa County. Caire et al. (1989) recorded *M. mephitis* as occurring in Kiowa County, but the specimen reported herein constitutes the first specimen collected in this county.

*Specimen examined* (1).—Kiowa Co.: 6.1 km N, 5.2 km E Granite in Altus-Lugert WMA, UTM 14-3874798N-0470434E, 482 m, 1 sex unknown (OSU13113).

## Family Procyonidae

*Procyon lotor* (Linnaeus 1758)

## Raccoon

This resourceful omnivore is found across Oklahoma (Caire et al. 1989) and is one of the most important furbearers in the state (Hatcher 1986). In western Oklahoma, it is most commonly associated with riparian habitat and anthropogenic environments including towns and farms. We collected a skull salvaged from a road kill in the northbound lane of Hwy. 283.

*Specimen examined* (1).—Ellis Co.: 22.5 km N, 11.4 km W Strong City on Hwy. 283 north of Canadian River bridge, UTM 14-3970133N-0434368E, 622 m, 1 female (OSU13114).

## ORDER ARTIODACTYLA

## Family Cervidae

*Odocoileus virginianus* (Zimmermann 1780)

## White-tailed Deer

The white-tailed deer was nearly extirpated in Oklahoma (Caire et al. 1989), but populations recovered through appropriate management and reintroduction programs. Caire et al. (1989) noted that white-tailed deer were present across most of Oklahoma, but

in western Oklahoma were restricted to the wooded riparian habitats. This preferred edge type habitat is no longer restricted only to these river drainages providing white-tailed deer more available habitat in western Oklahoma and allowing for increased population levels. Today, white-tailed deer are harvested across Oklahoma at record levels, but actual scientific specimens documenting the distribution of this species in the state are limited. We collected a skull and antler shed in Beaver County, and antler sheds in Beckham County. Caire et al. (1989) reported white-tailed deer as occurring in Beckham County, but this record is the first specimens collected from this county.

*Specimens examined* (3).—Beaver Co.: 2.4 km N, 11.3 km W Beaver in Beaver River WMA, UTM 14-4077786N-0353398E, 756 m, 1 male (OSU13115); 0.2 km S, 18.0 km W Beaver in Beaver River WMA, UTM 14-4075888N-0346990E, 761 m, 1 female (OSU13116). Beckham Co.: 16.7 km S, 0.2 km E Erick in Sandy Sanders WMA, UTM 14-3880194N-0420897E, 584 m, 1 male (OSU13117).

## ORDER RODENTIA

## Family Heteromyidae

*Perognathus flavescens* Merriam 1889

## Plains Pocket Mouse

Current distribution of the plains pocket mouse in Oklahoma encompasses the area west of the 98th meridian (Caire et al. 1989). However, studies of the distributional boundaries of this species and those of *P. flavus* and *P. merriami* in Oklahoma are in need of clarification. Based on Caire et al. (1989), the congeneric *P. flavus* has a sympatric distribution with *P. flavescens*. All recent studies concerning systematics, taxonomy, and biogeography of these species have not included Oklahoma specimens. Recent molecular analysis focused on Oklahoma populations of *Perognathus* supports parapatry (Coyner et al., in prep.), documenting potential problems with current identification of these species from Oklahoma and a need for biogeographic, morphologic, and taxonomic reassessment.

Despite one record from Harmon County (Martin and Preston 1970), most specimen records are from northwestern Oklahoma (Caire et al. 1989; Stangl et al. 1992). This species usually is found in areas with

sandy to sandy-loam soils and grassland vegetation, often including a shrubby component (Jones et al. 1983; Caire et al. 1989; Choate and Jones 1998). These conditions aptly describe the habitat in which we collected specimens in Beaver, Caddo, and Ellis counties.

*Specimens examined* (9).—Beaver Co.: 3.6 km N, 6.6 km W Beaver in Beaver River WMA, UTM 14-4078048N-0348941E, 767 m, 1 male (OSU13171). Caddo Co.: 10.1 km S, 12.2 km W Binger in Fort Cobb WMA, UTM 14-3897999N-0548178E, 421 m, 1 female (OSU13172). Ellis Co.: 26.2 km S, 5.6 km E Arnett in Packsaddle WMA, UTM 14-3972864N-0436753E, 686 m, 1 female (OSU13173); 26.6 km S, 2.6 km E Arnett in Packsaddle WMA, UTM 14-3972784N-0433194E, 693 m, 1 male (OSU13176); 26.6 km S, 10.1 km E Arnett in Packsaddle WMA, UTM 14-3972624N-0440073E, 687 m, 1 female (OSU13174), 1 male (OSU13175); 27.7 km S, 6.9 km E Arnett in Packsaddle WMA, UTM 14-3971402N-0437369E, 648 m, 2 females (OSU13177, OSU13178); 27.8 km S, 10.9 km E Arnett in Packsaddle WMA, UTM 14-3971262N-0441177E, 676 m, 1 male (OSU13179).

*Perognathus flavus* Baird 1855  
Silky Pocket Mouse

The silky pocket mouse has a distribution encompassing the western one-third of Oklahoma and the Panhandle (Caire et al. 1989). Since Caire et al. (1989), *P. merriami* has been re-elevated to specific status based on karyotype (Lee and Engstrom 1991) and morphology (Brant and Lee 2006). As detailed above, further research will be necessary to elucidate biogeographic, morphologic, and taxonomic issues in this genus. One new county record for the silky pocket mouse was collected in Texas County, and although Caire et al. (1989) reported *P. flavus* as occurring in Texas County, this record constitutes the first specimen record for the county.

*Specimen examined* (1).—Texas Co.: 19.5 km S, 1.1 km E Hooker in Optima WMA, UTM 14-4061935N-0303608E, 849 m, 1 female (OSU13180).

Family Cricetidae  
*Microtus ochrogaster*\* (Wagner 1842)  
Prairie Vole

Tall to mixedgrass prairies with thick layers of duff are the preferred habitat of the prairie vole (Jones 1983). Nevertheless, voucher specimens have been collected in the Oklahoma and Texas Panhandles (Poole and Matlack 2007) in upland shortgrass habitats (Clark and Tumblison 1992), lowland shortgrass prairie adjacent to playas (McCaffrey et al. 2003), riparian habitat along rivers, fallow fields (Reed and Choate 1988), fence rows (Manning and Jones 1988), and towns (Choate and Killebrew 1991). One specimen was even caught in a pitfall in the middle of a prairie dog town in shortgrass prairie (McCaffrey et al. 2003). We report a new specimen from Dewey County collected in a fallow field dominated by sparse annual grasses and forbs with no duff layer. The area surrounding the field was forested on three sides, with an agricultural field to the north. The only established grassland habitat in the area was in ditches along roads and between fields.

*Specimen examined* (1).—Dewey Co.: 10.3 km N, 8.4 km W Canton in Canton WMA, UTM 14-4000407N-0529058E, 495 m, 1 male (OSU13119).

*Microtus pinetorum*\* (Le Conte 1830)  
Woodland Vole

The woodland vole is an eastern forest species preferring sites with well-drained soils and a well-developed layer of leaf litter and duff (Smolen 1981). Several new distributional records for this species have been reported previously in western Oklahoma (Clark and Tumblison 1992; Braun and Revelez 2005). We obtained a new specimen for Dewey County which constitutes the westernmost site record in northern Oklahoma. We hypothesize that this and other recent records document a westward movement of the species along developing woody riparian corridors associated with major waterways not historically heavily wooded.

*Specimen examined* (1).—Dewey Co.: 9.0 km N, 7.7 km W Canton in Canton WMA, UTM 14-3999278N-0529504E, 499 m, 1 female (OSU13118).



***Baiomys taylori*** (Thomas 1887)  
Northern Pygmy Mouse

The northern pygmy mouse has a well documented record of northward range expansions in Texas and Oklahoma (Diersing and Diersing 1979; Stangl et al. 1983; Austin and Kitchens 1986; Cleveland 1986; Stangl and Dalquest 1986; Hollander et al. 1987; Choate et al. 1990; Caire 1991; Tumilson et al. 1993; Brant and Dowler 2002; McDonald et al. 2006). It was first recorded in Oklahoma (Cotton County) by Stangl and Dalquest (1986), and has since been found in four other counties: Greer (Tumilson et al. 1993), Harmon (Caire 1991), Jefferson, and Tillman (McDonald et al. 2006). Here we report the northernmost record for this species from Beckham County. Although found in a variety of habitats (Eshelman and Cameron 1987), these recent expansion records from Oklahoma and Texas have certain habitat similarities. Typically, these specimens were collected in areas with a densely vegetated microhabitat (often road-side ditches) in shortgrass or mixedgrass prairie with some mesquite (*Prosopis glandulosa*) present. *Opuntia* sp. is often present, which has been suggested as important for *B. taylori* (Eshelman and Cameron 1987). Establishment and expansion of mesquite prairie with dense *Opuntia* caused by heavy grazing and reduced fire frequency may be causing these range expansions.

*Specimens examined* (2).—Beckham Co.: 18.7 km S, 6.4 km E Erick in Sandy Sanders WMA, UTM 14-3878352N-0427794E, 546 m, 1 female (OSU13120); 19.8 km S, 7.2 km E Erick in Sandy Sanders WMA, UTM 14-3877319N-0428331E, 541 m, 1 female (OSU13121).

***Neotoma floridana*** (Ord 1818)  
Eastern Woodrat

The eastern woodrat prefers woody vegetation and woody edge habitats including upland and riparian forests, shelter belts, and shrubby areas with dense overhead cover (Rainey 1956; Caire et al. 1989). This species may be expanding westward with the increase of woody vegetation due to fire suppression and plantings in western counties of Oklahoma. New county records were obtained in Ellis and Roger Mills counties, and represent the westernmost records of *N. floridana* in Oklahoma.

*Specimens examined* (4).—Ellis Co.: 8.2 km S, 13.5 km W Arnett in Ellis County WMA, UTM 14-3991055N-0417190E, 683 m, 1 male (OSU13122); 25.9 km S, 1.3 km E Arnett in Packsaddle WMA, UTM 14-3972933N-0431879E, 647 m, 1 female (OSU13123). Roger Mills Co.: 2.1 km S, 1.6 km E Cheyenne in Black Kettle WMA, UTM 14-3938784N-0440744E, 651 m, 2 females (OSU13124, OSU13125).

***Onychomys leucogaster*\*** (Wied-Neuwied 1841)  
Northern Grasshopper Mouse

The northern grasshopper mouse is found in the western one-half of Oklahoma and reaches its eastern distributional limit in Canadian, Grant, and Kingfisher counties. It often is associated with sandy soils and is known for its carnivorous diet and high-pitched vocalizations (Ruffer 1964; Caire et al. 1989). We obtained five new specimens from Beckham County and one new specimen from Kiowa County.

*Specimens examined* (6).—Beckham Co.: 14.1 km S, 3.2 km W Erick PO in Sandy Sanders WMA, UTM 14-3882169N-0417421E, 636 m, 1 female (OSU13127), 1 male (OSU13126); 14.9 km S, 2.7 km E Erick PO in Sandy Sanders WMA, UTM 14-3881003N-0423855E, 620 m, 1 female (OSU13128) 1 male (OSU13129); 16.6 km S, 2.1 km E Erick PO in Sandy Sanders WMA, UTM 14-3879274N-0422735E, 614 m, 1 male (OSU13130). Kiowa Co.: 7.4 km N, 5.3 km E Granite in Altus-Lugert WMA, UTM 14-3876283N-0470814E, 483 m, 1 male (OSU13131).

***Peromyscus maniculatus*** (Wagner 1845)  
North American Deermouse

The North American deermouse is common across the state (Caire et al. 1989) and is found most commonly in grasslands and other open habitats. As shrubby or woody vegetative components increase, its congener *Peromyscus leucopus* tends to replace it in dominance. Specimens reported here were trapped in an old food plot overgrown with forbs and grasses of generally short stature. Although Caire et al. (1989) recorded *P. maniculatus* in Dewey County, our records represent the first specimens of this species collected from this county.



*Specimens examined* (8).—Dewey Co.: 10.3 km N, 8.4 km W Canton in Canton WMA, UTM 14-4000407N-0529058E, 495 m, 1 female (OSU13132), 2 males (OSU13133, OSU13134); 0.3 km S, 15.0 km E Seiling in Canton WMA, UTM 14-4000050N-0521544E, 500 m, 1 female (OSU13135), 1 male (OSU13136); 0.5 km S, 18.4 km E Seiling in Canton WMA, UTM 14-3999809N-0524780E, 500 m, 1 female (OSU13139), 2 males (OSU13137, OSU13138).

***Reithrodontomys fulvescens* J. A. Allen 1894**  
Fulvous Harvest Mouse

The fulvous harvest mouse was thought to be restricted to the eastern one-half of Oklahoma; however, specimens have been collected in Caddo, Comanche, and Jefferson counties (Caire et al. 1989). Since Caire et al. (1989), its western distributional limits have expanded to include much of southwestern Oklahoma (Clark and Tumblison 1992; Stangl et al. 1992; Braun and Revelez 2005). New records were obtained for Beaver, Dewey, Ellis, Harper, Roger Mills, and Tillman counties, extending its distribution into northwestern Oklahoma including the Panhandle. We propose that the westward expansion of *R. fulvescens* is due in part to the suppression of fire and the resultant encroachment of shrubby and woody vegetation into historically prairie habitats. However, it should be noted that this species was conspicuously absent from our captures from most of these localities in 2007 (exceptions: Dewey and Tillman counties), possibly suggesting drought (occurring in 2006) as a limiting factor for this species in western portions of Oklahoma.

*Specimens examined* (22).—Beaver Co.: 3.6 km N, 6.6 km W Beaver in Beaver River WMA, UTM 14-4078048N-0348941E, 767 m, 1 male (OSU13140). Dewey Co.: 10.6 km N, 12.7 km W Canton in Canton WMA, UTM 14-4001020N-0524393E, 496 m, 1 male (OSU13142); 10.6 km N, 6.8 km W Canton in Canton WMA, UTM 14-4000411N-0530047E, 498 m, 1 male (OSU13141); 0.3 km S, 15.0 km E Seiling in Canton WMA, UTM 14-4000050N-0521544E, 500 m, 1 male (OSU13147); 9.3 km N, 7.9 km W Canton in Canton WMA, UTM 14-3999829N-0529262E, 496 m, 1 female (OSU13143); 9.2 km N, 7.6 km W Canton in Canton WMA, UTM 14-3999304N-0529674E, 494 m, 1 male (OSU13144); 9.0 km N, 7.7 km W Canton

in Canton WMA, UTM 14-3999278N-0529504E, 499 m, 1 female (OSU13145), 1 male (OSU13146). Ellis Co.: 6.3 km S, 16.3 km W Arnett in Ellis County WMA, UTM 14-3993175N-0414278E, 715 m, 1 male (OSU13148); 8.1 km S, 14.7 km W Arnett in Ellis County WMA, UTM 14-3990831N-0416384E, 697 m, 1 female (OSU13149), 1 male (OSU13150); 8.2 km S, 11.8 km W Arnett in Ellis County WMA, UTM 14-3991336N-0418954E, 695 m, 1 female (OSU13153); 9.1 km S, 15.5 km W Arnett in Ellis County WMA, UTM 14-3990142N-0415350E, 700 m, 1 female (OSU13151); 9.7 km S, 15.8 km W Arnett in Ellis County WMA, UTM 14-3989867N-0414980E, 679 m, 1 male (OSU13152); 26.6 km S, 2.6 km E Arnett in Packsaddle WMA, UTM 14-3972784N-0433194E, 693 m, 1 male (OSU13154); 27.8 km S, 6.4 km E Arnett in Packsaddle WMA, UTM 14-3972265N-0436031E, 688 m, 1 female (OSU13155). Harper Co.: 3.9 km N, 2.9 km E Fort Supply in Cooper WMA, UTM 14-4052082N-0450191E, 640 m, 1 male (OSU13156). Roger Mills Co.: 18.0 km N, 14.2 km W Cheyenne in Black Kettle WMA, UTM 14-3959526N-0425393E, 689 m, 2 females (OSU13157, OSU13158), 1 male (OSU13159). Tillman Co.: 11.4 km S, 6.4 km E Frederick in Hackberry Flat WMA, UTM 14-3794356N-0504683E, 354 m, 1 male (OSU13160); 14.3 km S, 5.6 km E Fredrick in Hackberry Flat WMA, UTM 14-3791198N-0503871E, 357 m, 1 male (OSU13161).

***Reithrodontomys montanus*\* (Baird 1855)**  
Plains Harvest Mouse

The plains harvest mouse is known from throughout Oklahoma but is more common in the shorter and medium grass prairies of the west. *R. montanus* prefers habitats described as “open grassy areas” and has been collected in Oklahoma in habitats ranging from sumac (*Rhus* spp.) to grazed fields (Goertz 1963:124; Schnell et al. 1980). *R. montanus* appears to be ecologically separate in habitat preference from the other species of *Reithrodontomys* in Oklahoma, *R. fulvescens* (prefers shrubby grasslands) and *R. megalotis* (more dense grasslands), with which it is sympatric within the state (Hill and Hibbard 1943; Goertz 1963; Peterson 1975). Five new specimens were obtained in Kiowa County.

*Specimens examined* (5).—Kiowa Co.: 11.4 km N, 5.5 km W Mountain Park in Mountain Park WMA,

UTM 14-3850730N-0499328E, 456 m, 1 female (OSU13162); 9.5 km N, 6.4 km W Mountain Park in Mountain Park WMA, UTM 14-3848958N-0498271E, 451 m, 2 males (OSU13163, OSU13164); 9.5 km N, 5.6 km W Mountain Park in Mountain Park WMA, UTM 14-3848969N-0499082E, 438 m, 1 male (OSU13165); 7.9 km N, 8.2 km W Mountain Park in Mountain Park WMA, UTM 14-3847347N-0496657E, 425 m, 1 male (OSU13166).

#### Family Muridae

#### *Mus musculus* Linnaeus 1758

#### House Mouse

The house mouse presumably was introduced into North America from ships of early European explorers, fur traders, and settlers, and has since become naturalized (Caire et al. 1989; Long 2003). The species currently can be found in human commensal and feral populations across Oklahoma (Schnell et al. 1980; Caire et al. 1989; Clark et al. 1996; Payne et al. 2001). Commensal populations occur in cities, towns, farm yards, silos and abandoned buildings, whereas most feral populations are still related to human disturbed

habitats such as roadsides, crop, and fallow fields, but they also have been recorded in more native microhabitats. Competition may occur between *M. musculus* and native *Peromyscus* species (Caldwell 1964; King 1957); however, due to the relation of house mice to anthropogenic habitats it is believed that they have little impact on wild populations (Kaufman and Kaufman 1990). We report specimen records for Greer County obtained in a mesquite and cheat grass dominated prairie, Beaver County obtained from a sparsely vegetated sand dune, and Ellis County obtained in a mixedgrass prairie near an abandoned school house and small cattle pen.

*Specimens examined* (4).—Beaver Co.: 1.5 km N, 16.6 km W Beaver in Beaver River WMA, UTM 14-4077030N-0348264E, 773 m, 1 male (OSU13167). Ellis Co.: 28.3 km S, 13.7 km E Arnett in Packsaddle WMA, UTM 14-3970961N-0444133E, 676 m, 1 male (OSU13168). Greer Co.: 1.6 km N, 2.4 km E Granite in Altus-Lugert WMA, UTM 14-3870220N-0467984E, 489 m, 1 males (OSU13169); 0.6 km N, 2.4 km E Granite in Altus-Lugert WMA, UTM 14-3869622N-0467929E, 489 m, 1 female (OSU13170).

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## LITERATURE CITED

- Austin, T. A., and J. A. Kitchens. 1986. Expansion of *Baiomys taylori* into Hardeman County, Texas. *Southwestern Naturalist* 31:547–548.
- Baker, R. J., and J. L. Patton. 1967. Karyotypes and karyotypic variation of North American vespertilionid bats. *Journal of Mammalogy* 48:270–286.
- Bartholomew, G. A. 1986. The role of natural history in contemporary biology. *BioScience* 36:324–329.
- Best, T. L., and K. N. Geluso. 2003. Summer foraging range of Mexican free-tailed bats (*Tadarida brasiliensis mexicana*) from Carlsbad Cavern, New Mexico. *Southwestern Naturalist* 48:590–596.
- Brant, J. G., and R. C. Dowler. 2002. Reexamination of the range for the northern pygmy mouse, *Baiomys taylori* (Rodentia: Muridae), in northeastern Texas. *Texas Journal of Science* 54:189–192.
- Brant, J. G., and T. E. Lee, Jr. 2006. Morphological analysis of *Perognathus flavus* and *P. merriami* (Rodentia: Heteromyidae). *Southwestern Naturalist* 51:79–86.
- Braun, J. K., and M. A. Revelez. 2005. Distribution records and comments on Oklahoma mammals. *Texas Journal of Science* 57:3–24.
- Byrd, C. L. 1982. The home range, habitat and prey utilization of the barn owl (*Tyto alba*) in South Texas. Masters Thesis. Texas A&I University, Kingsville.
- Caire, W. 1991. A breeding population of the northern pygmy mouse, *Baiomys taylori*, in southwestern Oklahoma. *Southwestern Naturalist* 36:364–365.
- Caire, W., J. D. Tyler, B. P. Glass, and M. A. Mares. 1989. *Mammals of Oklahoma*. University of Oklahoma Press, Norman.
- Choate, L. L., and C. Jones. 1998. Annotated checklist of recent land mammals of Oklahoma. Occasional Papers, Museum of Texas Tech University 181:1–13.
- Choate, L. L., J. K. Jones, Jr., R. W. Manning, and C. Jones. 1990. Westward ho: continued dispersal of the pygmy mouse, *Baiomys taylori*, on the Llano Estacado and in adjacent areas of Texas. Occasional Papers, Museum of Texas Tech University 134:1–8.
- Choate, L. L., and F. C. Killebrew. 1991. Distributional records of the California myotis and the prairie vole in the Texas panhandle. *Texas Journal of Science* 43:214–215.
- Caldwell, L. D. 1964. An investigation of competition in natural populations of mice. *Journal of Mammalogy* 45:12–30.
- Clark, B. K., B. S. Clark, W. E. Munsterman, and T. R. Homerding. 1996. Differential use of roadside fencerows and contiguous pastures by small mammals in southeastern Oklahoma. *Southwestern Naturalist* 41:54–59.
- Clark, B. K., and R. Tumilson. 1992. New records of mammals from Washita County, Oklahoma. *Proceedings of the Oklahoma Academy of Science* 72:37–38.
- Cleveland, A. G. 1986. First record of *Baiomys taylori* north of the Red River. *Southwestern Naturalist* 31:547.
- Coyner, B. S., T. E. Lee, D. S. Rogers, and R. A. Van Den Bussche. In prep. Taxonomic status and species limits of *Perognathus* in the southern Great Plains.
- Dalquest, W. W., F. B. Stangl, Jr., and J. K. Jones, Jr. 1990. Mammalian zoogeography of a Rocky Mountain – Great Plains interface in New Mexico, Oklahoma, and Texas. Special Publications, Museum of Texas Tech University 4:1–78.
- Diersing, V. E. and J. E. Diersing. 1979. Additional records of *Baiomys taylori taylori* (Thomas) in Texas. *Southwestern Naturalist* 24:707–708.
- Eshelman, B. D., and G. N. Cameron. 1987. *Baiomys taylori*. *Mammalian Species* 285:1–7.
- Findley, J. S., A. H. Harris, D. E. Wilson, and C. Jones. 1975. *Mammals of New Mexico*. University of New Mexico Press, Albuquerque.
- Gannon, W. L., R. S. Sikes, and the Animal Care and Use Committee of the American Society of Mammalogists. 2007. Guidelines of the American Society of Mammalogists for the use of wild mammals in research. *Journal of Mammalogy* 88:809–823.
- Geluso, K., T. R. Mollhagen, J. M. Tigner, and M. A. Bogan. 2005. Western expansion of the eastern Pipistrelle (*Pipistrellus subflavus*) in the United States, including new records from New Mexico, South Dakota, and Texas. *Western North American Naturalist* 65:405–409.
- Gettinger, D. 1991. New distributional records for rice rats (*Oryzomys palustris*) in Oklahoma. *Proceedings of the Oklahoma Academy of Science* 71:53.
- Girard, B., V. Paul, and J. D. Tyler. 1990. The status of *Rattus rattus* and *Rattus norvegicus* in southwestern Oklahoma. *Proceedings of the Oklahoma Academy of Science* 70:43–44.
- Glass, B. P. 1982. Seasonal movements of Mexican free-tailed bats *Tadarida brasiliensis mexicana* banded



- in the Great Plains. *Southwestern Naturalist* 27:127–133.
- Goertz, J. W. 1963. Some biological notes on the plains harvest mouse. *Proceedings of the Oklahoma Academy of Sciences* 43:123–125.
- Gubanyi, J. A. 1989. Habitat use and diet analysis of breeding common barn-owls in western Nebraska. Masters Thesis. University of Nebraska, Lincoln.
- Hamilton, W. J., Jr. 1949. The bacula of some North American vespertilionid bats. *Journal of Mammalogy* 30:97–102.
- Hatcher, R. T. 1986. Oklahoma's fur harvest: a fifty year review. Oklahoma Department of Wildlife Conservation, Oklahoma City.
- Hill, J. E., and C. W. Hibbard. 1943. Ecological differentiation between two harvest mice (*Reithrodontomys*) in western Kansas. *Journal of Mammalogy* 24:22–25.
- Hollander, R. R., J. K. Jones, Jr., R. W. Manning, and C. Jones. 1987. Noteworthy records of mammals from the Texas panhandle. *Texas Journal of Science* 39:97–102.
- Hoofer, S. R., and R. A. Van Den Bussche. 2003. Molecular phylogenetics of the chiropteran family Vespertilionidae. *Acta Chiropterologica* 5(supplement):1–63.
- Hoofer, S. R., R. A. Van Den Bussche, and I. Horáček. 2006. Generic status of the American pipistrelles (Vespertilionidae) with description of a new genus. *Journal of Mammalogy* 87:981–992.
- Humphrey, S. R., and T. H. Kunz. 1976. Ecology of a Pleistocene relict, the western big-eared bat (*Plecotus townsendii*), in the southern Great Plains. *Journal of Mammalogy* 57:470–494.
- Johnson, K. S. 1972. Mineral resources map of Oklahoma. Pp. 6 in *Geology and earth resources of Oklahoma: an atlas of maps and cross sections* (K. S. Johnson, C. C. Branson, N. M. Curtis, Jr., W. E. Ham, W. E. Harrison, M. V. Marcher, and J. F. Roberts, eds.). Oklahoma Geological Survey, Educational Publication Number 1. University of Oklahoma, Norman.
- Johnson, K. S. 2003. Evaporite karst in the Permian Blaine Formation and associated strata of western Oklahoma. Pp. 41–55 in *Evaporite karst and engineering/environmental problems in the United States* (K. S. Johnson, and J. T. Neal, eds.). Oklahoma Geological Survey, Circular 109. University of Oklahoma, Norman.
- Jones, J. K., Jr., R. W. Manning, C. Jones, and R. R. Hollander. 1983. Mammals of the northern Texas panhandle. *Occasional Papers, Museum of Texas Tech University* 126:1–54.
- Kaufman, D. W., and G. L. Kaufman. 1990. House mice (*Mus musculus*) in natural and disturbed habitats in Kansas. *Journal of Mammalogy* 71:428–432.
- King, J. A. 1957. Intra- and interspecific conflict of *Mus* and *Peromyscus*. *Ecology* 38:355–357.
- Kunz, T. H., and R. A. Martin. 1982. *Plecotus townsendii*. *Mammalian Species* 175:1–6.
- Lee, T. E., and M. D. Engstrom. 1991. Genetic variation in the silky pocket mouse (*Perognathus flavus*) in Texas and New Mexico. *Journal of Mammalogy* 72:273–285.
- Lomolino, M. V., and G. A. Smith. 2003. Prairie dog towns as islands: applications of island biogeography and landscape ecology for conserving nonvolant terrestrial vertebrates. *Global Ecology and Biogeography* 12:275–286.
- Long, J. L. 2003. *Introduced mammals of the world: their history, distribution and influence*. Csiro Publishing, Collingwood, Australia.
- Manning, R. W., and J. K. Jones, Jr. 1988. A specimen of the prairie vole, *Microtus ochrogaster*, from the northern Texas panhandle. *Texas Journal of Science* 40:463–464.
- Martin, R. E., and J. R. Preston. 1970. The mammals of Harmon County, Oklahoma. *Proceedings of the Oklahoma Academy of Science* 49:42–60.
- McCaffrey, R. E., M. C. Wallace, J. F. Kamler, and J. D. Ray. 2003. Noteworthy distributional records of the prairie vole in the Texas and Oklahoma panhandles. *Southwestern Naturalist* 48:717–719.
- McDonald, B. K., P. W. Wilson, and W. Caire. 2006. New county records of Oklahoma mammals based on remains identified in owl pellets. *Proceedings of the Oklahoma Academy of Science* 86:47–52.
- Menu, H. 1984. Révision du statut de *Pipistrellus subflavus* (F. Cuvier, 1832). Proposition d'un taxon générique nouveau: *Perimyotis* nov. gen. *Mammalia* 48:409–416.
- Nisbett, R. A., W. Caire, M. D. Stuart, G. M. Caddell, J. M. Crutcher, and C. H. Calisher. 2001. Serologic survey of Oklahoma rodents: evidence for the presence of a Hantavirus and an Arenavirus. *Proceedings of the Oklahoma Academy of Science* 81:53–66.



- Oklahoma Department of Wildlife Conservation. 2005. Oklahoma Comprehensive Wildlife Conservation Strategy. Oklahoma Department of Wildlife Conservation, Oklahoma City. (<http://www.wildlifedepartment.com/CWCS.htm>).
- Payne, T., and W. Caire. 1999. Species diversity of small mammals in the Tallgrass Prairie Preserve, Osage County, Oklahoma. *Proceedings of the Oklahoma Academy of Science* 79:51–59.
- Payne, T., S. Stevens, and W. Caire. 2001. Annotated checklist of the mammals of the Tallgrass Prairie Preserve, Osage County, Oklahoma. *Proceedings of the Oklahoma Academy of Science* 81:41–51.
- Pearson, O. P., M. R. Koford, and A. K. Pearson. 1952. Reproduction of the lump-nosed bat (*Corynorhinus rafinesquei*) in California. *Journal of Mammalogy* 33:273–320.
- Peterson, M. K. 1975. An analysis of multiple captures in several rodents from Durango, Mexico. *Journal of Mammalogy* 56:703–705.
- Poole, M. W., and R. S. Matlack. 2007. Prairie vole and other small mammals from the Texas panhandle. *Southwestern Naturalist* 52:442–445.
- Reed, M. P., and J. R. Choate. 1988. Noteworthy southwestern records of the prairie vole. *Southwestern Naturalist* 33:495–496.
- Ruffer, D. G. 1964. Studies on the ethology of the northern grasshopper mouse (*Onychomys leucogaster*). Doctoral Dissertation. University of Oklahoma, Norman.
- Schmidly, D. J. 2002. Texas natural history: a century of change. Texas Tech University Press, Lubbock.
- Schmidly, D. J. 2005. What it means to be a naturalist and the future of natural history at American universities. *Journal of Mammalogy* 86:449–456.
- Schnell, G. D., R. D. Owen, R. K. Chesser, and P. G. Risser. 1980. Populations of small mammals in north-central Oklahoma. *Southwestern Naturalist* 25:67–80.
- Smith, S. J., D. M. Leslie, Jr., M. J. Hamilton, J. B. Lack, and R. A. Van Den Bussche. In press. Subspecific affinities and conservation genetics of western big-eared bats (*Corynorhinus townsendii pallescens*) at the edge of their distributional range. *Journal of Mammalogy*.
- Smith, T., and R. Tumblison. 2004. An evaluation of geographic variation within an isolated population of big-eared bats (*Corynorhinus townsendii*) in Oklahoma, Kansas and Texas. *Proceedings of the Oklahoma Academy of Science* 84:1–7.
- Smolen, M. J. 1981. *Microtus pinetorum*. *Mammalian Species* 147:1–7.
- Sparks, D. W., and J. R. Choate. 2000. Distribution, natural history, conservation status, and biogeography of bats in Kansas. Pp. 173–228 in *Reflections of a naturalist: papers honoring Professor Eugene D. Fleharty* (J. R. Choate, ed.). Fort Hays Studies, Special Issue 1. Hays, Kansas.
- Stancampiano, A. J., and W. Caire. 1995. Food habits of *Peromyscus* and *Reithrodontomys* in the Wichita Mountains Wildlife Refuge, Oklahoma. *Proceedings of the Oklahoma Academy of Science* 75:45–49.
- Stancampiano, A. J., and G. D. Schnell. 2004. Microhabitat affinities of small mammals in southwestern Oklahoma. *Journal of Mammalogy* 85:948–958.
- Stangl, F. B., Jr., and C. B. Carr. 1997. Status of *Blarina hylophaga* (Insectivora: Soricidae) in north Texas and southern Oklahoma. *Texas Journal of Science* 49:159–162.
- Stangl, F. B., Jr., and W. W. Dalquest. 1986. Two noteworthy records of Oklahoma mammals. *Southwestern Naturalist* 31:123–124.
- Stangl, F. B., Jr., W. W. Dalquest, and R. J. Baker. 1992. Mammals of southwestern Oklahoma. Occasional Papers, Museum of Texas Tech University 151:1–47.
- Stangl, F. B., Jr., J. R. Goetze, and K. D. Spradling. 2004. Historical zoogeography and taxonomic status of the prairie vole (*Microtus ochrogaster*) from the southern plains of Texas and Oklahoma. Occasional Papers, Museum of Texas Tech University 235:1–12.
- Stangl, F. B., Jr., B. F. Koop, and C. S. Hood. 1983. Occurrence of *Baiomys taylori* (Rodentia: Cricetidae) on the Texas high plains. Occasional Papers, Museum of Texas Tech University 85:1–4.
- Tappe, P. A., R. E. Thill, J. J. Krystofik, and G. A. Heidt. 1994. Small mammal communities of mature pine hardwood stands in the Ouachita Mountains. General Technical Report, SO-112. U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station, Asheville, North Carolina.
- Taulman, J. F., and L. W. Robbins. 1996. Recent range expansion and distributional limits of the nine-banded armadillo (*Dasypus novemcinctus*) in the United States. *Journal of Biogeography* 23:635–648.

- Thill, R. E., R. W. Perry, N. E. Koerth, P. A. Tappe, and D. G. Peitz. 2004. Initial small mammal responses to alternative pine regeneration methods in Arkansas and Oklahoma: preliminary findings. General Technical Report, SRS-74. US Department of Agriculture, Forest Service, Southern Research Station, Asheville, North Carolina.
- Tumlison, R., V. R. McDaniel, and J. G. Duffy. 1993. Further extension of the northern pygmy mouse, *Baiomys taylori*, in southwestern Oklahoma. *Southwestern Naturalist* 38:285–286.
- Tyler, J. D., and S. L. Donelson. 1996. Noteworthy mammal records for western Oklahoma. *Proceedings of the Oklahoma Academy of Science* 76:103–104.
- Wallace, D. B., and F. B. Stangl, Jr. 2003. Records for seven species of mammals from Jackson County, Oklahoma. *Proceedings of the Oklahoma Academy of Science* 83:87–88.
- Webster, W. D., and J. K. Jones, Jr. 1982. *Reithrodontomys megalotis*. *Mammalian Species* 167:1–5.
- Wilcove, D. S., and T. Eisner. 2000. The impending extinction of natural history. *The Chronicle Review*, 15 September 2000. (<http://chronicle.com/weekly/v47/i03/03b02401.htm>).
- Wilson, D. E., and D. M. Reeder (eds.). 2005. *Mammal species of the world: a taxonomic and geographic reference*. Johns Hopkins University Press, Baltimore, Maryland.
- Woods, A. J., J. M. Omernik, D. R. Butler, J. G. Ford, J. E. Henley, B. W. Hoagland, D. S. Arndt, and B. C. Moran. 2005. *Ecoregions of Oklahoma*. U.S. Geological Survey, Reston, Virginia. Map scale 1:1,250,000.

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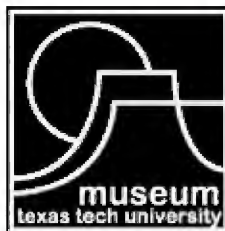
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